

Appendix 1. The International Classification of Diseases, 9th Revision, Diagnoses Codes Used to Define Outcome Variables, Consortium on Safe Labor 2002-2008

Definition in current study	Collected ICD-9 codes	Definition
Obstetric complications		
Gestational diabetes	648.8	Other current conditions in the mothers classifiable elsewhere but complicating pregnancy, childbirth, or the puerperium – Abnormal glucose tolerance
Gestational hypertension	642.3	Transient hypertension of pregnancy
Preeclampsia	642.4	Mild or unspecified pre-eclampsia
	642.5	Severe pre-eclampsia
Eclampsia	642.6	Eclampsia
Placental abruption	641.2	Premature separation of placenta
Placenta previa	641.0	Placenta previa without hemorrhage
	641.1	Hemorrhage from placenta previa
Hemorrhage	666-666.3	Postpartum hemorrhage
Fever	672	Pyrexia of unknown origin during puerperium
Major puerperal infection	670.02- 670.04	Major puerperal infection
	995.91- 995.92	Sepsis
Complication of surgical wound	674.1	Disruption of cesarean wound
	674.2	Disruption of perineal wound
	674.3	Other complications of obstetric surgical wounds
Infection of genitourinary tract	646.6	Infection of genitourinary tract in pregnancy
Acute cardiovascular events		
Ischemic heart disease	410	Acute myocardial infarction
	411	Other acute and subacute forms of ischemic heart disease
	413	Angina pectoris
Stroke	429.7	Certain sequela of myocardial infarction, not elsewhere classified
	430	Subarachnoid hemorrhage
	431	Intracerebral hemorrhage
	432	Other and unspecified intracranial hemorrhage
	433	Occlusion and stenosis of precerebral arteries
	434	Occlusion of cerebral arteries
	435	Transient cerebral ischemia
	436	Acute, but ill-defined cerebrovascular disease
	674	Cerebrovascular disorder in the puerperium
	668.2	Complications of the administration of anesthetic or other sedation in labor and delivery
Heart failure	997.09	Complications affecting specified body systems, not elsewhere classified – Other nervous system complications
	428	Heart failure
Cardiac arrest/failure	427.5	Cardiac arrest
	668.1	Complications of the administration of anesthetic or other sedation in labor and delivery cardiac complications
	669.4	Other complications of obstetrical surgery and procedures

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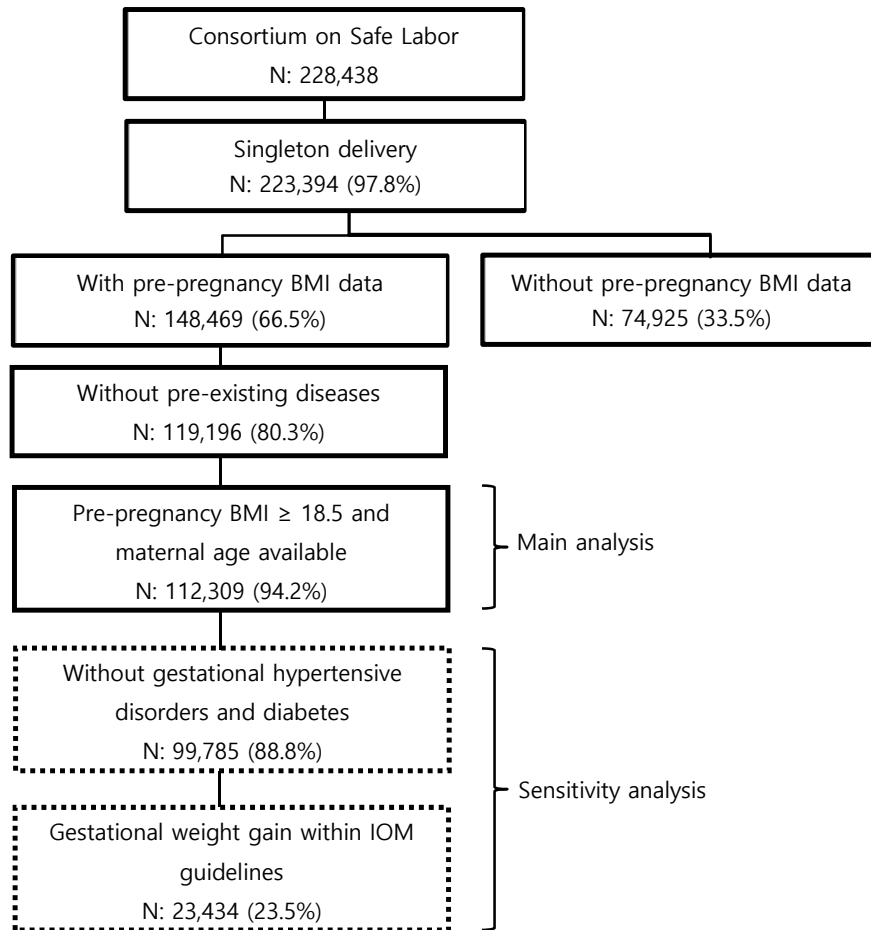
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	997.1	Complications affecting specified body systems, not elsewhere classified cardiac complications
Unspecified event	648.62, 648.64	Other cardiovascular diseases with postpartum complication
Neonatal complications		
Birth injury	767	Birth trauma
Congenital anomalies	740-759	Congenital anomalies
Respiratory distress syndrome	769	Respiratory distress syndrome
Intracerebral hemorrhage	767.0 772.2	Subdural and cerebral hemorrhage Subarachnoid hemorrhage
Seizure	779.0 780.32 780.39	Convulsion in the newborn Complex febrile convulsions Other convulsions
Prei- or intraventricular hemorrhage	772.10-772.14	Intraventricular hemorrhage of fetus or newborn
Necrotizing enterocolitis	777.5	Necrotizing enterocolitis in newborn
Transient tachypnea	770.6	Transient tachypnea of newborn
Sepsis	771.81 038 995.91 995.92	Septicemia [sepsis] of newborn Septicemia Sepsis Severe sepsis
Apnea	770.81 770.82 786.03	Primary apnea of newborn Other apnea of newborn Apnea
Asphyxia	768.5 768.6 768.9	Severe birth asphyxia Mild or moderate birth asphyxia Unspecified asphyxia in live born infant
Aspiration	770.1 770.85 770.86	Fetal and newborn aspiration Aspiration of postnatal stomach contents without respiratory symptoms Aspiration of postnatal stomach with respiratory symptoms
Retinopathy of prematurity	362.21	Retinopathy of prematurity

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Appendix 2. Source of the Study Analytic Sample



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Appendix 3. The International Classification of Diseases, 9th Revision, Diagnoses Codes Used to Define Pre-existing Chronic Diseases, Consortium on Safe Labor 2002-2008

Definition in current study	Collected ICD-9 codes	Definition
Hypertension	401-405.9	Hypertensive disease
	642.0	Benign essential hypertension complicating pregnancy, childbirth, and puerperium
	642.1	Hypertension secondary to renal disease complicating pregnancy childbirth and puerperium
	642.2	Other preexisting hypertension complicating pregnancy, childbirth, and puerperium
	642.7	Pre-eclampsia or eclampsia superimposed on pre-existing hypertension
Diabetes	250-250.9	Diabetes mellitus
	648.0	Other current conditions in mothers classifiable elsewhere but complicating pregnancy, childbirth, or puerperium- diabetes mellitus
Heart disease	393	Chronic rheumatic pericarditis
	394	Diseases of the mitral valve
	395	Diseases of the aortic valve
	396	Diseases of the mitral and aortic valve
	397	Diseases of other endocardial structures
	398	Other rheumatic heart disease
	412	Old myocardial infarction
	414	Other forms of chronic ischemic heart disease
	423	Other diseases of pericardium
	424	Other diseases of endocardium
	425	Cardiomyopathy
	426	Conduction disorders
	427	Cardiac dysrhythmias
	(exclude 427.5)	
429	Ill-defined descriptions and complications of heart disease	
Asthma	493-493.9	Asthma
Thyroid diseases	193	Malignant neoplasm of thyroid gland
	226	Benign neoplasm of thyroid glands
	240-246.9	Disorders of thyroid gland
	648.1	Other current conditions in mothers classifiable elsewhere but complicating pregnancy, childbirth, or puerperium-thyroid dysfunction
Gastrointestinal diseases	555-558.9	Noninfectious enteritis and colitis
Renal diseases	585-585.9	Chronic kidney disease
	586	Renal failure, unspecified
	588-588.9	Disorders resulting from impaired renal function
	646.2	Unspecified renal disease in pregnancy, without mention of hypertension
Depression	296.2-296.3	Major depressive disorder
	311	Depressive disorder, not elsewhere classified
Epilepsy	345-345.9	Epilepsy and recurrent seizures
	649.4	Epilepsy complicating pregnancy, childbirth, or the puerperium
Hyperlipidemia	272-272.9	Disorders of lipid metabolism
HIV	042	HIV disease

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079.53	HIV, type 2
795.71	Nonspecific serologic evidence of HIV
V08	Asymptotic HIV infection status

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Appendix 4. Number of Pregnancies From the Same Woman by Outcome During the Study Period of Consortium on Safe Labor 2002-2008

Outcomes	No of events	No of women contributed multiple events
<i>Obstetric outcome</i>		
Gestational hypertensive disorders	7,888	120
Gestational Diabetes	5,257	112
Placental previa	750	14
Cesarean delivery	29,657	966
Prelabor cesarean delivery	10,782	239
Intrapartum cesarean deliver	18,875	371
Cesarean delivery among induction	8,055	14
Cesarean delivery among spontaneous labors	10,820	243
Operative vaginal delivery	6,200	24
Induction	41,049	858
Oxytocin augmentation	31,021	622
Abruption	1,623	19
3 rd , 4 th laceration	2,213	8
Hemorrhage	8,054	224
Blood transfusion	3,536	145
Maternal fever	2,101	16
Major puerperal infection	513	2
Infection of genitourinary tract	161	0
Complication of surgical wounds	379	2
Hysterectomy	67	0
Acute cardiovascular events	252	2
Maternal ICU admission	529	5
<i>Neonatal outcome</i>		
Preterm birth < 37 weeks	10,488	171
Early preterm birth < 32 weeks	1,865	14
Late preterm birth 32-<37 weeks		

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Stillbirth	379	2
Large for Gestational Age	11,277	184
Birth Injury	2,006	3
Congenital anomaly	6,866	28
Transient tachypnea	3,434	9
Apnea	1,617	3
Aspiration	582	1
Asphyxia	288	0
Sepsis	2,673	8
Seizure	203	0
Intracranial hemorrhage	250	0
NICU admission	11,122	100
Respiratory distress syndrome	2,229	12
Necrotizing enterocolitis	163	0
PVH-IVH hemorrhage	416	0
Retinopathy of prematurity	298	0

The total numbers of deliveries are in the footnote of Appendix 6 and 7.

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Appendix 5. Demographic Characteristics of Singleton Pregnancies Among Low-Risk Women Without Gestational Hypertensive Disorders and Gestational Diabetes by Prepregnancy Obesity, Consortium on Safe Labor 2002-2008

Characteristics	Normal BMI (n=61,402, 61.5%)	Overweight (n=22,927, 23.0%)	Obese I (n= 9,512, 9.5%)	Obese II (n=3,720, 3.7%)	Obese III (n=2,224, 2.2%)	P value*
Age (years), Mean (±SD)	27.4 (±6.1)	27.6 (±5.9)	27.6 (±5.8)	27.5 (±5.6)	27.5 (±5.5)	< 0.001
Race/ethnicity, n (%)						< 0.001
White	34,840 (56.7)	10,542 (46.0)	4,055 (42.6)	1,592 (42.8)	834 (37.5)	
Black	8,999 (14.7)	5,007 (21.8)	2,586 (27.2)	1,216 (32.7)	910 (40.9)	
Hispanic	11,222 (18.3)	5,506 (24.0)	2,171 (22.8)	677 (18.2)	338 (15.2)	
Asian/Pacific Islanders	2,838 (4.6)	540 (2.4)	184 (1.9)	68 (1.8)	33 (1.5)	
Multi-race/Others/Unknown	3,503 (5.7)	1,332 (5.8)	516 (5.4)	167 (4.5)	109 (4.9)	
Marital status, n (%)						0.01
Married	41,555 (67.7)	13,958 (60.9)	5,395 (56.7)	2,010 (54.0)	1,046 (47.0)	
Unmarried	18,925 (30.8)	8,534 (37.2)	3,928 (41.3)	1,623 (43.6)	1,120 (50.4)	
Unknown	922 (1.5)	435 (1.9)	189 (2.0)	87 (2.3)	58 (2.6)	
Insurance, n (%)						< 0.001
Private	33,965 (55.3)	11,540 (50.3)	4,599 (48.4)	1,852 (49.8)	1,010 (45.4)	
Public/Self pay	16,546 (27.0)	8,127 (35.5)	3,854 (40.5)	1,535 (41.3)	1,060 (47.7)	
Others/Unknown	10,891 (17.7)	3,260 (14.2)	1,059 (11.1)	33 (9.0)	154 (6.9)	
Parity, n (%)						< 0.001
Nulliparous	27,004 (44.0)	7,870 (34.3)	2,745 (28.9)	1,043 (28.0)	631 (28.4)	
Smoking, n (%)	3,161 (5.2)	1,407 (6.1)	688 (7.2)	297 (8.0)	191 (8.6)	< 0.001
Alcohol use, n (%)	1,021 (1.7)	347 (1.5)	150 (1.6)	58 (1.6)	33 (1.5)	0.04

More than one delivery was contributed by 2, 652 normal BMI women (4.3%), 743 overweight women (3.2%), 274 obese women (2.9%), 76 obese class II women (2.0%), and 71 obese class III women (3.2%). To adjust for clustering, models included robust standard errors from generalized estimating equations.

* P values are based on generalized estimating equations and adjusted for study site.

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Appendix 6. Obstetric Complications of Singleton Pregnancies Among Low-Risk Women Without Gestational Hypertensive Disorders and Gestational Diabetes By Prepregnancy Obesity, Consortium on Safe Labor 2002-2008

Outcomes	Events		RR (95% CI)	P for trend*
	n	(%)		
Placenta previa				0.08
Normal BMI	415	0.7	Reference	
Overweight	157	0.7	0.94 (0.78, 1.13)	
Obese I	75	0.8	1.04 (0.81, 1.34)	
Obese II	13	0.4	0.48 (0.28, 0.83)	
Obese III	14	0.6	0.76 (0.43, 1.34)	
Cesarean delivery				< 0.001
Normal BMI	13,239	21.6	Reference	
Overweight	6,245	27.2	1.25 (1.22, 1.28)	
Obese I	3,019	31.7	1.46 (1.41, 1.50)	
Obese II	1,345	36.2	1.69 (1.62, 1.76)	
Obese III	971	43.7	1.97 (1.88, 2.07)	
Prelabor cesarean delivery				< 0.001
Normal BMI	4,827	7.9	Reference	
Overweight	2,249	9.8	1.14 (1.08, 1.19)	
Obese I	1,166	12.3	1.35 (1.28, 1.43)	
Obese II	553	14.9	1.68 (1.56, 1.82)	
Obese III	416	18.7	2.03 (1.86, 2.21)	
Intrapartum cesarean delivery				< 0.001
Normal BMI	8,412	14.9	Reference	
Overweight	3,996	19.3	1.32 (1.28, 1.37)	
Obese I	1,853	22.2	1.57 (1.50, 1.64)	
Obese II	792	25.0	1.80 (1.70, 1.92)	
Obese III	555	30.7	2.12 (1.98, 2.27)	
Cesarean delivery among induction				< 0.001
Normal BMI	3,359	15.9	Reference	
Overweight	1,609	19.8	1.30 (1.24, 1.36)	
Obese I	719	22.1	1.53 (1.43, 1.63)	
Obese II	305	24.0	1.69 (1.53, 1.86)	
Obese III	237	30.6	1.94 (1.75, 2.15)	
Cesarean delivery among spontaneous labor				< 0.001
Normal BMI	5,053	14.3	Reference	
Overweight	2,087	19.0	1.34 (1.28, 1.40)	
Obese I	1,134	22.3	1.58 (1.49, 1.67)	
Obese II	487	25.7	1.86 (1.72, 2.01)	
Obese III	318	30.8	2.14 (1.95, 2.35)	
Operational vaginal delivery				0.04
Normal BMI	3,894	8.5	Reference	
Overweight	1,093	7.1	0.99 (0.93, 1.06)	
Obese I	362	6.3	0.97 (0.88, 1.08)	
Obese II	102	4.9	0.78 (0.65, 0.94)	

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Obese III	60	5.7	0.90 (0.70, 1.14)	
Induction				< 0.001
Normal BMI	21,151	37.4	Reference	
Overweight	8,129	39.3	1.12 (1.10, 1.14)	
Obese I	3,260	39.1	1.16 (1.12, 1.19)	
Obese II	1,272	40.2	1.21 (1.16, 1.26)	
Obese III	774	42.8	1.32 (1.25, 1.39)	
Oxytocin augmentation				< 0.001
Normal BMI	17,842	50.4	Reference	
Overweight	6,480	51.6	1.05 (1.03, 1.07)	
Obese I	2,599	51.1	1.06 (1.03, 1.09)	
Obese II	948	50.0	1.05 (1.01, 1.09)	
Obese III	537	51.9	1.10 (1.04, 1.16)	
Abruption				0.05
Normal BMI	844	1.4	Reference	
Overweight	318	1.4	0.92 (0.81, 1.05)	
Obese I	144	1.5	0.89 (0.75, 1.07)	
Obese II	53	1.4	0.82 (0.62, 1.07)	
Obese III	37	1.7	0.86 (0.62, 1.19)	
3rd, 4th laceration				< 0.001
Normal BMI	1,439	3.3	Reference	
Overweight	364	2.4	0.90 (0.80, 1.00)	
Obese I	103	1.7	0.75 (0.62, 0.92)	
Obese II	34	1.5	0.69 (0.49, 0.96)	
Obese III	16	1.4	0.62 (0.38, 1.03)	
Hemorrhage				0.28
Normal BMI	4,196	6.8	Reference	
Overweight	1,616	7.1	1.02 (0.97, 1.08)	
Obese I	693	7.3	1.03 (0.95, 1.11)	
Obese II	293	7.9	1.09 (0.97, 1.22)	
Obese III	162	7.3	0.98 (0.84, 1.14)	
Blood transfusion				0.74
Normal BMI	2,047	5.0	Reference	
Overweight	679	4.8	0.99 (0.91, 1.08)	
Obese I	275	4.8	1.02 (0.91, 1.16)	
Obese II	110	5.0	1.07 (0.89, 1.29)	
Obese III	52	4.1	0.96 (0.74, 1.25)	
Maternal fever				< 0.001
Normal BMI	997	1.6	Reference	
Overweight	448	2.0	1.18 (1.05, 1.31)	
Obese I	177	1.9	1.10 (0.94, 1.29)	
Obese II	90	2.4	1.38 (1.11, 1.71)	
Obese III	60	2.7	1.43 (1.10, 1.86)	
Major puerperal infection				< 0.001
Normal BMI	213	0.4	Reference	
Overweight	100	0.4	1.24 (0.98, 1.58)	
Obese I	41	0.4	1.23 (0.88, 1.73)	
Obese II	33	0.9	2.51 (1.72, 3.67)	

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Obese III	8	0.4	0.99 (0.49, 2.00)	
Infection of genitourinary tract				0.19
Normal BMI	60	0.1	Reference	
Overweight	36	0.2	1.45 (0.94, 2.23)	
Obese I	16	0.2	1.43 (0.80, 2.56)	
Obese II	6	0.2	1.30 (0.55, 3.08)	
Obese III	4	0.2	1.33 (0.46, 3.80)	
Complication of surgical wounds				0.31
Normal BMI	191	0.3	Reference	
Overweight	69	0.3	1.05 (0.79, 1.38)	
Obese I	27	0.3	1.02 (0.67, 1.54)	
Obese II	11	0.3	1.05 (0.57, 1.93)	
Obese III	10	0.5	1.68 (0.87, 3.24)	
Hysterectomy				-
Normal BMI	38	0.07	Failed to converge	
Overweight	10	0.05		
Obese I	9	0.12		
Obese II	1	0.03		
Obese III	3	0.17		
Maternal ICU admission				0.74
Normal BMI	229	0.4	Reference	
Overweight	91	0.5	1.06 (0.83, 1.35)	
Obese I	34	0.4	1.04 (0.73, 1.50)	
Obese II	9	0.3	0.96 (0.49, 1.85)	
Obese III	6	0.3	1.11 (0.49, 2.51)	
Acute cardiovascular events				0.08
Normal BMI	108	0.2	Reference	
Overweight	51	0.2	1.20 (0.85, 1.70)	
Obese I	23	0.2	1.30 (0.82, 2.07)	
Obese II	9	0.2	1.33 (0.67, 2.60)	
Obese III	7	0.3	1.63 (0.74, 3.60)	

Relative risks (RR) were adjusted for maternal age, maternal race, insurance type, marital status, parity, smoking and alcohol use during pregnancy and study site.

* Test of linear trend was conducted by using the median BMI value for each obesity group and fitting this as a continuous variable in the logistic regression models.

Gestational hypertensive disorders included gestational hypertension, preeclampsia, and eclampsia and acute cardiovascular events included ischemic heart disease, heart failure, cardiac arrest/failure, and unspecified cardiovascular postpartum complications.

Specific outcomes were analyzed among respective deliveries at risk and sites which did not report specific outcomes were excluded from respective analysis: Intrapartum cesarean delivery and induction among spontaneous or induced labor (n=90,574), cesarean delivery among induction (n=34,586), cesarean delivery among spontaneous labors (n=55,988), operative vaginal delivery among vaginal deliveries (n=69,959), oxytocin augmentation among spontaneous labors (n=55,918), 3rd, 4th laceration was analyzed among vaginal deliveries (n=68,257), blood transfusion among 64,495 deliveries, hysterectomy among 84,729 deliveries, maternal ICU admission among 84,631 deliveries.

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Appendix 7. Neonatal Complications of Singleton Pregnancies Among Low-Risk Women Without Gestational Hypertensive Disorders and Gestational Diabetes by Prepregnancy Obesity, Consortium on Safe Labor 2002-2008

Outcomes	Events		Fully adjusted RR (95% CI)	P for trend *
	N	(%)		
Preterm birth < 37 week				<0.001
Normal BMI	4,991	8.1	Reference	
Overweight	1,856	8.1	0.93 (0.88, 0.98)	
Obese I	795	8.4	0.91 (0.85, 0.98)	
Obese II	281	7.6	0.81 (0.72, 0.91)	
Obese III	186	8.4	0.84 (0.73, 0.97)	
Early preterm birth < 32 week				0.09
Normal BMI	779	1.3	Reference	
Overweight	344	1.5	1.06 (0.93, 1.20)	
Obese I	161	1.7	1.13 (0.95, 1.34)	
Obese II	64	1.7	1.12 (0.87, 1.46)	
Obese III	44	2.0	1.17 (0.86, 1.59)	
Late preterm birth 32-< 37 week				< 0.001
Normal BMI	4,212	7.0	Reference	
Overweight	1,512	6.7	0.90 (0.85, 0.96)	
Obese I	634	6.8	0.87 (0.80, 0.95)	
Obese II	217	5.9	0.75 (0.66, 0.86)	
Obese III	142	6.5	0.76 (0.66, 0.92)	
Stillbirth				0.06
Normal BMI	191	0.3	Reference	
Overweight	79	0.3	1.06 (0.82, 1.39)	
Obese I	45	0.5	1.47 (1.05, 2.07)	
Obese II	13	0.4	1.14 (0.64, 2.02)	
Obese III	10	0.5	1.41 (0.74, 2.69)	
Large for Gestational Age				< 0.001
Normal BMI	4,863	7.9	Reference	
Overweight	2,703	11.8	1.50 (1.44, 1.57)	
Obese I	1,245	13.1	1.70 (1.60, 1.80)	
Obese II	504	13.6	1.80 (1.65, 1.96)	
Obese III	327	14.7	2.04 (1.83, 2.26)	
Birth Injury				0.002
Normal BMI	1,062	1.7	Reference	
Overweight	400	1.7	1.14 (1.01, 1.27)	
Obese I	162	1.7	1.19 (1.01, 1.40)	
Obese II	69	1.9	1.29 (1.02, 1.64)	
Obese III	39	1.8	1.22 (0.89, 1.68)	
Congenital anomaly				0.07
Normal BMI	3,553	5.8	Reference	
Overweight	1,384	6.0	1.05 (0.99, 1.12)	
Obese I	587	6.2	1.08 (0.99, 1.18)	
Obese II	215	5.8	1.00 (0.87, 1.14)	
Obese III	144	6.5	1.10 (0.94, 1.30)	

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Transient tachypnea				< 0.001
Normal BMI	1,598	2.6	Reference	
Overweight	730	3.2	1.17 (1.07, 1.28)	
Obese I	327	3.4	1.21 (1.07, 1.36)	
Obese II	140	3.8	1.28 (1.08, 1.52)	
Obese III	107	4.8	1.52 (1.26, 1.85)	
Apnea				0.10
Normal BMI	713	1.2	Reference	
Overweight	324	1.5	1.11 (0.97, 1.26)	
Obese I	127	1.4	0.98 (0.81, 1.19)	
Obese II	38	1.1	0.73 (0.53, 1.01)	
Obese III	25	1.2	0.74 (0.50, 1.10)	
Aspiration				< 0.001
Normal BMI	264	0.4	Reference	
Overweight	126	0.6	1.28 (1.03, 1.58)	
Obese I	66	0.7	1.62 (1.23, 2.13)	
Obese II	20	0.5	1.21 (0.77, 1.91)	
Obese III	22	1.0	2.09 (1.34, 2.34)	
Asphyxia				0.83
Normal BMI	152	0.3	Reference	
Overweight	60	0.3	1.04 (0.77, 1.41)	
Obese I	19	0.2	0.79 (0.48, 1.28)	
Obese II	13	0.4	1.39 (0.78, 2.49)	
Obese III	6	0.3	1.03 (0.46, 2.33)	
Respiratory distress syndrome				0.005
Normal BMI	962	19.3	Reference	
Overweight	385	20.7	1.09 (0.98, 1.21)	
Obese I	169	21.3	1.08 (0.93, 1.25)	
Obese II	72	25.6	1.32 (1.07, 1.62)	
Obese III	46	24.7	1.23 (0.95, 1.59)	
Sepsis				< 0.001
Normal BMI	1,185	1.9	Reference	
Overweight	553	2.4	1.18 (1.06, 1.30)	
Obese I	252	2.7	1.24 (1.08, 1.43)	
Obese II	96	2.6	1.20 (0.98, 1.48)	
Obese III	74	3.3	1.42 (1.12, 1.79)	
Necrotizing enterocolitis				0.27
Normal BMI	75	1.5	Reference	
Overweight	29	1.6	1.08 (0.70, 1.67)	
Obese I	8	1.0	0.69 (0.33, 1.44)	
Obese II	9	3.2	2.22 (1.11, 4.42)	
Obese III	4	2.2	1.50 (0.56, 4.04)	
Seizure				0.26
Normal BMI	100	0.2	Reference	
Overweight	39	0.2	1.04 (0.71, 1.52)	
Obese I	22	0.2	1.39 (0.86, 2.25)	
Obese II	11	0.3	1.72 (0.91, 3.26)	
Obese III	3	0.1	0.73 (0.23, 2.35)	

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Intracranial hemorrhage				0.65
Normal BMI	112	0.2	Reference	
Overweight	56	0.2	1.22 (0.88, 1.69)	
Obese I	27	0.3	1.37 (0.89, 2.09)	
Obese II	8	0.2	1.07 (0.52, 2.21)	
Obese III	3	0.1	0.60 (0.19, 1.89)	
PVH-IVH hemorrhage				0.003
Normal BMI	168	3.4	Reference	
Overweight	85	4.6	1.37 (1.06, 1.78)	
Obese I	39	4.9	1.56 (1.11, 2.20)	
Obese II	14	5.0	1.58 (0.93, 2.70)	
Obese III	8	4.3	1.31 (0.65, 2.64)	
Retinopathy of prematurity				0.006
Normal BMI	123	2.5	Reference	
Overweight	66	3.6	1.40 (1.04, 1.89)	
Obese I	23	2.9	1.23 (0.79, 1.90)	
Obese II	14	5.0	2.01 (1.18, 3.41)	
Obese III	8	4.3	1.58 (0.79, 3.17)	
NICU admission				< 0.001
Normal BMI	5,097	8.3	Reference	
Overweight	2,248	9.8	1.12 (1.07, 1.18)	
Obese I	932	9.8	1.08 (1.01, 1.15)	
Obese II	390	10.5	1.13 (1.02, 1.24)	
Obese III	277	12.5	1.25 (1.12, 1.40)	

Relative risks (RR) were adjusted for maternal age, maternal race, insurance type, marital status, parity, smoking and alcohol use during pregnancy, and study site.

*Test of linear trend was conducted by using the median BMI value for each obesity group and fitting this as a continuous variable in the logistic regression models.

Respiratory distress syndrome, necrotizing enterocolitis, PVH-IVH hemorrhage and retinopathy prematurity were analyzed among preterm births before 37 weeks of gestation (n=8,109). Late preterm birth was analyzed among 98,393 deliveries and apnea was analyzed among 94,054 deliveries.

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